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Lobster Fishing Effort on the Outer Coast of Nova Scotia, 1983 Versus 1998

Effort de pêche du homard sur le littoral extérieur de la Nouvelle-Écosse en 1983 par opposition à 1998

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Abstract

Fishers were interviewed in 1998 to gather information on boat size and construction, electronic equipment, trap construction, number of crew, extent of fishing area, and fishing effort (days and trap hauls). The results were compared to a similar survey conducted in 1983. Annual lobster landings on the outer coast of mainland Nova Scotia were just starting to recover from a near collapsed state during the first interview. Encouraged by the turnaround, between the two interview dates fishers upgraded their equipment and built new boats and gear. The majority were built from fiberglass and powered by diesel engines. All had hydraulic trap haulers and had deck hands for at least part of the season. The use of electronic equipment increased dramatically. Trap hauls increased through the early to mid-1980s but have since stabilized. Fishers have expanded fishing areas by moving to deeper water. Judging from the upgrading of equipment fishing power has increased, but the fleet contains unused effort since trap hauls per season has changed little since the mid-80s.

Résumé

En 1998, nous avons interrogé des pêcheurs en vue d'obtenir de l'information sur la longueur et les caractéristiques de construction de leurs bateaux, le matériel électronique, les caractéristiques de construction des casiers, le nombre de membres d'équipage, la superficie des zones de pêche et l'effort de pêche(nombre de jours de pêche et de casiers levés). Nous avons comparé les résultats à ceux d'une enquête semblable réalisée en 1983. Au moment de cette dernière, les débarquements annuels de homard sur le littoral extérieur de la partie continentale de la Nouvelle-Écosse commençaient tout juste à se rétablir d'un quasi-effondrement. Encouragés par le redressement de la pêche, les pêcheurs ont modernisé leur équipement et construit de nouveaux bateaux et engins pendant la période entre les deux enquêtes. La plupart des bateaux construits étaient faits en fibre de verre et propulsés par un moteur à diesel. Tous étaient munis d'un treuil hydraulique pour relever les casiers et des matelots de pont aidaient aux opérations pendant au moins une partie de la saison. L'utilisation de matériel électronique a affiché une hausse spectaculaire. Le nombre de casiers levés a augmenté du début au milieu des années 1980, mais se sont stabilisés depuis. La superficie des zones de pêche a augmenté, les pêcheurs se rendant en zones plus profondes. À en juger par la modernisation de l'équipement, la capacité de capture a augmenté, quoique la flottille affiche un effort inutilisé car le nombre de casiers levés par saison a peu changé depuis le milieu des années 1980.

Introduction

The lobster fishery has been the most lucrative fishery on the Atlantic coast of Nova Scotia. In the late 1970's, annual landings in lobster fishing areas (LFAs) 31, 32 and 33 on the outer coast of mainland Nova Scotia (Fig. 1) had reached the lowest levels since the fishery began in the 1880's. Since then, landings have increased as much as tenfold (Figs. 2 and 3) and fishers encouraged by the increase upgraded their boats and built more traps.

Fishers were interviewed in 1982-83 to describe the fishery (Duggan, 1985). Interviews were repeated in 1998 to examine changes in fishing power.

Methods

In 1998 fishers in three LFAs were interviewed on an opportunistic basis while carrying out routine fieldwork; 48 fishers from LFA 33, 11 from LFA 32 and 16 from LFA31. Total lobster licenses in these areas were 760, 160, and 140, respectively. Fishers were located throughout each LFA to ensure geographical coverage. Data from LFAs 31A and 31B (Fig.1) are reported as LFA 31. The interviewer followed a standard format laid out on an interview sheet. Annual lobster landings were obtained from the Commercial Data Division of the Department of Fisheries and Oceans. Daily catch and trap hauls were compiled from voluntary logbooks provided by fishers to the DFO Science Branch. To compare time trends using the log data, two successive years were combined to increase sample size. These results were compared to those from the 1985 report (Duggan, 1985).

Results

Details on boat length, construction and equipment are summarized in Table 1. Average length of vessels increased in all LFAs since 1983. The average age of boats in 1998 was about thirteen years, indicating that most had been built since the period of low landings in the early 1980's. The dominant choice for construction material changed from wood to fiberglass in LFAs 32 and 33, whereas about one-half remained wood in LFA 31. Diesel engines predominated with LFAs 31, 32 and 33 having 56%, 64%, and 77%, respectively. All vessels were now equipped with hydraulic trap haulers, whereas only about one-half were in 1983. Colour depth sounders were present on 87% of boats in 1998 compared to a predominance of paper sounders in 1983. There were also large increases in the use of electronic navigation gear such as radar, Loran C, and Global Positioning Systems (GPS) from the earlier report. A few boats were equipped with chart plotters.

Table 2 presents average sizes of fishing areas and maximum depths fished in 1983 for each LFA based on the 1983 interviews. Table 3 contains a summary of current fishing strategies including changes in size of fishing areas, trap construction material and design modification, number of deckhands and use of electronics. Fishers in all LFAs have expanded their fishing areas to deeper water. Since 1983 trap construction shifted

from nearly 100% wood to combinations of both wood and wire. Most fishers have modified their trap designs by changing hoop sizes, numbers of entrance heads, number of parlour chambers, etc. during the past several years. Numbers of deckhands per boat increased in all areas. Fishers reporting an ability to fish better with the use of electronics are 88%, 91% and 60% for LFAs 31, 32, and 33, respectively.

Table 4 includes data on fishing effort per boat. Fishers did not use their 250 legal trap limit in 1981-82, but have since the mid-1980's. Total trap hauls per season and number of days required to land 50% of the seasons total catch has been stable since the mid-1980's. LFA 31 and 32 seasons are in the spring and they required about one-half the season to land one-half of their catch. The LFA 33 season starts late November and extends to the following May 31st. The major portion of their catch was landed in December during the first two weeks of the season.

Discussion

Traditionally, effort changes in the lobster fishery have paralleled fluctuations in abundance. The fishery was near collapse in 1979-80 when landings fell to 5% of all time highs, (Robinson, 1979), and fishers were exerting a minimum of effort. A license buy back program reduced the number of license holders in the study area by approximately 30% in LFAs 31 and 32 and 20% in LFA 33 (Pringle and Duggan, 1984). Landings began to recover and optimistic fishers began improving their gear. Since 1983 the fleet of lobster boats in LFAs 31, 32 and 33 has undergone a major upgrading. Fishers reporting the ability to fish better by using electronic technology was as high as 91% in LFA 32. Fishers in all areas have experimented with different trap designs to improve efficiency. Increases in the size of fishing areas have been reported throughout the study area; mostly by moving into deeper water further offshore.

These fishers now fish smarter. The legal number of traps allowed was under utilized in 1981-82 but are now fully deployed by all fishers. Unlike 1983, there were no reports of unused licenses. Trap hauls per boat, increased with landings in the early 1980's, but have remained stable since. Although bigger boats, better navigation equipment, and low maintenance wire traps could allow fishers to make more trap hauls per season, these appear not to have increased. Therefore, the existing fleet could likely fish harder.

References

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Table 1. Details of boat size, construction, and equipment for LFAs 31, 32, and 33.

		LFA 33		LFA 32		LFA 31	
		1998-99	1983	1998-99	1983	1998-99	1983
	avg length	36	29.5	31.2	29	31.8	25.3
	avg age	12.6	11.9	14	11	12.8	11.9
		%	%	%	%	%	%
construction	wood	13	89	0	95	56	100
	fibreglass	79	11	73	5	44	0
	both	8	0	27	0	0	0
engine	gas	21	57	36	79	44	66
	diesel	77	19	64	21	56	4
	outboard	2	19	0	0	0	31
	oars	0	5	0	0	0	0
trap	hand	0	22	0	5	0	21
hauler	mechanical	0	24	0	32	0	48
	hydraulic	100	56	100	63	100	31
radio	none	2	46	0	0	0	62
	vhf	96	14	100	11	100	3
	cb	2	40	0	79	0	62
sounder	paper	12	56	9	58	19	62
	color	88	0	91	0	81	3
	none	0	44	0	42	0	35
loran	no	21	80	9	84	0	100
	yes	79	20	91	16	88	0
gps	no	46	100	64	100	88	100
	yes	54	0	36	0	12	0
radar	no	6	52	27	79	56	72
	yes	94	48	73	21	44	28

Table 2. Average area and average maximum depths fished in 1981-82 for LFAs 31, 32, and 33.

	LFA 33	LFA 32	LFA 31
average area fished	24 sq km	22 sq km	40 sq km
maximum depth	12 fathoms 22 m	16 fathoms 29 m	15 fathoms 27 m

Table 3. Change in fishing strategy between 1982 and 1998 for LFAs 31, 32, and 33.

		LFA 33		LFA 32		LFA 31	
		1998 %	1983 %	1998 %	1983 %	1998 %	1983 %
area fished	same	52		91		56	
	more	44		9		38	
	less	4		0		6	
days fished	same	56		91		81	
	more	30		9		13	
	less	14		0		6	
trap construction	wood	10	100	9	95	56	100
	wire	38	0	0	0	6	0
	both	52	0	91	5	38	0
trap design	same	69		9		19	
	changed	31		91		81	
electronics advantage	yes	60		91		88	
no. deck hands		1.9	0.4	1.5	0.3	1.4	0.3

Table 4. Days fished, number of traps and trap hauls per boat, and number of fishing days required to take 50% of the season's catch.

LFA	Season	Number of Interviews (I) or logs (L)	Average Number of days fished per season	Average number of traps per boat	Average number of trap hauls per boat per season	Average number of fishing days to take 50% of catch
33	1980/81-81/82	100 I	41	147	NA	NA
33	1986/87-87/88	24 L	67	250	12519	11.5
33	1992/93-93/94	20 L	57	250	9315	10.0
33	1996/97-97/98	19 L	50	250	10717	11.0
32	1981-1982	20 I	38	190	NA	NA
32	1987-1988	10 L	48	250	9400	23.0
32	1991-1992	12 L	49	250	9355	23.0
32	1996-1997	28 L	51	250	10017	26.5
31	1981-1982	35 I	33	193	NA	NA
31	1987-1988	13 L	45	250	9792	21.5
31	1991-1992	16 L	52	250	11145	25.0
31	1996-1997	18 L	44	250	10182	23.5

NA. Not available

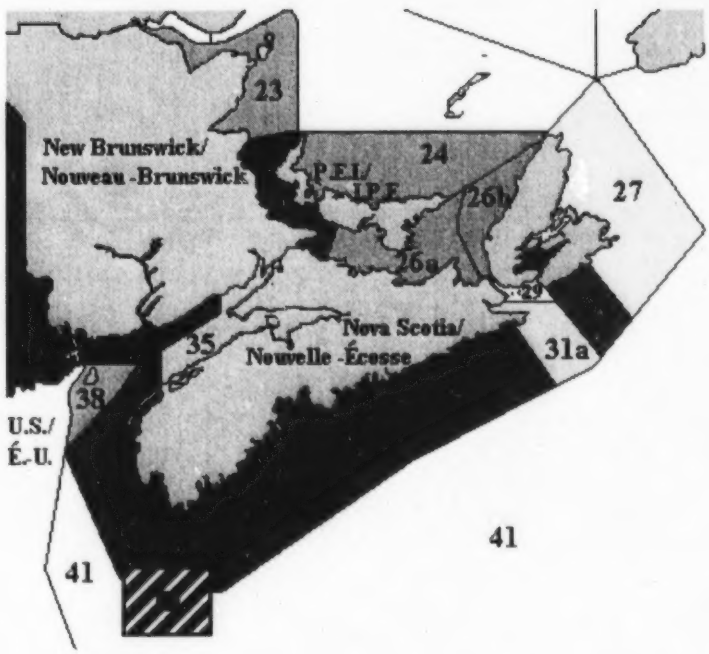

Figure 1. Lobster fishing areas (LFAs) in Maritime Provinces.

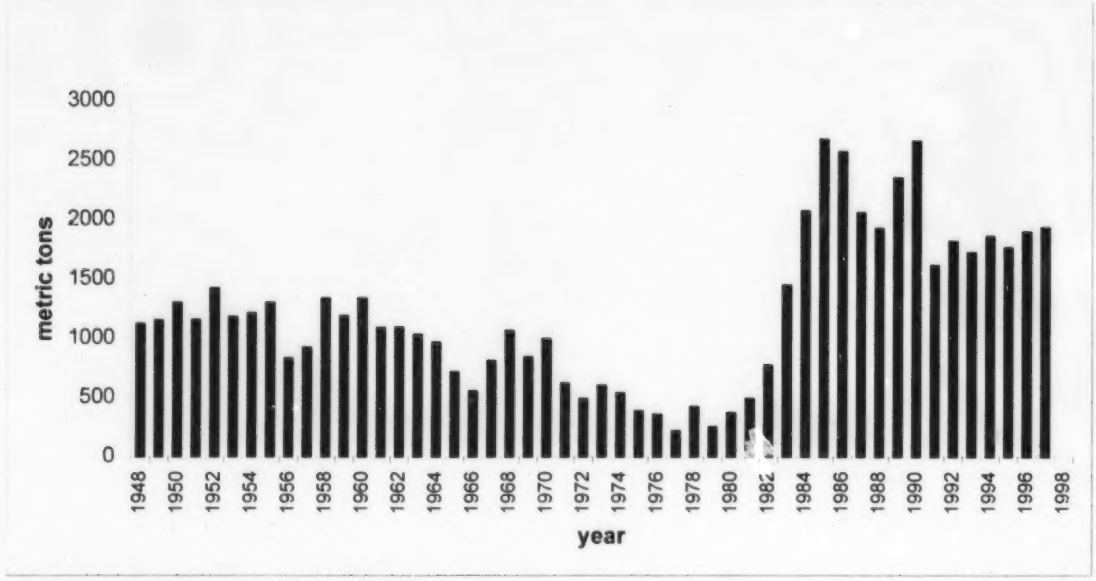

Figure 2. Annual lobster landings, LFA 33.

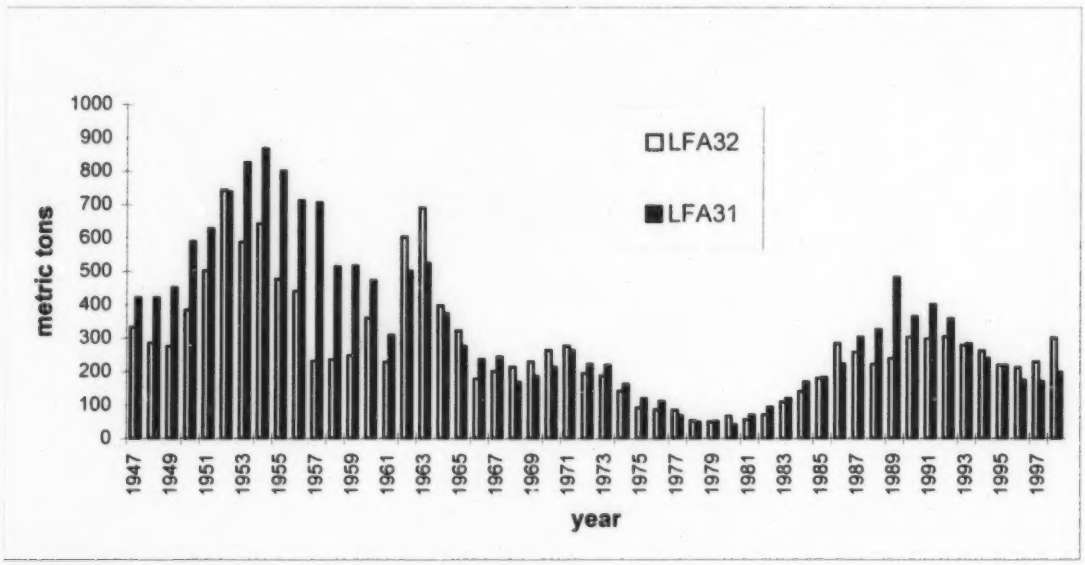

Figure 3. Annual lobster landings, LFAs 31-32.